

Monthly Marine Biotoxin Report

September 2007

Technical Report No. 07-24

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of September, 2007. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

Southern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at a small number of sampling stations between San Luis Obispo and Santa Barbara counties during

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Figure 1. Distribution of toxin-producing phytoplankton in Southern California during September, 2007.

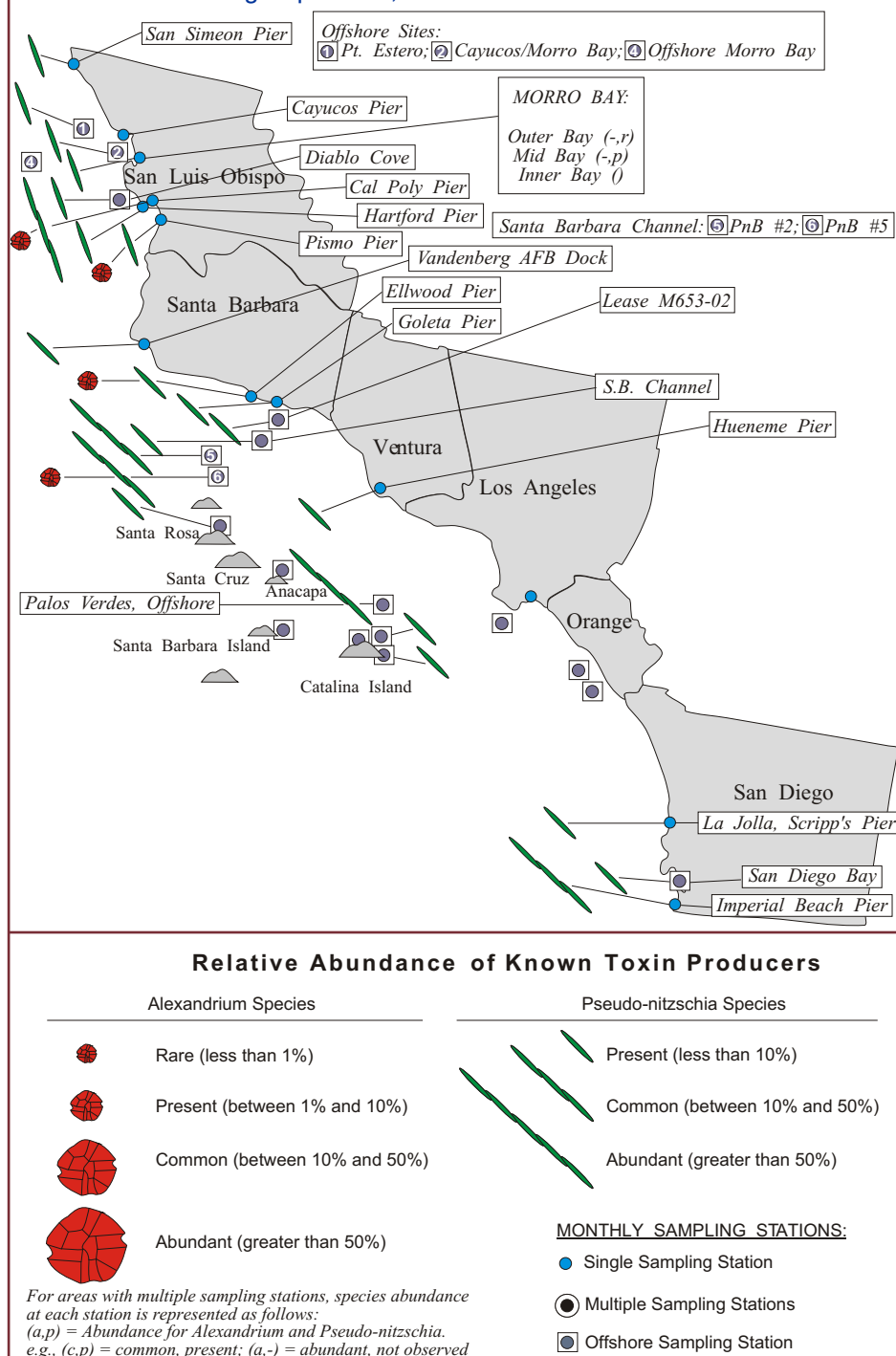
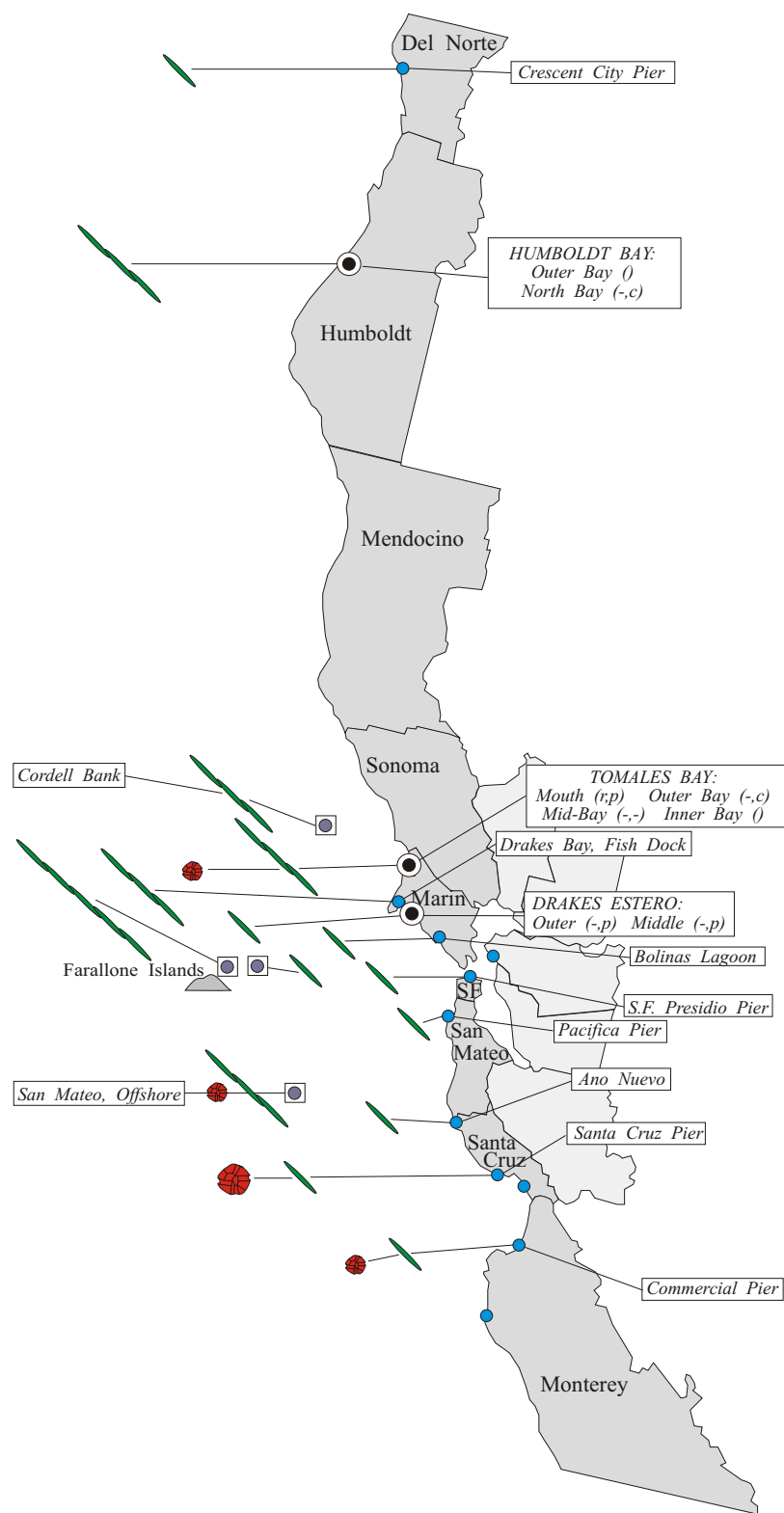


Figure 2. Distribution of toxin-producing phytoplankton in Northern California during September, 2007.



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September (Figure 1). The distribution and relative abundance of this dinoflagellate decreased in most regions compared to observations in August.

Toxicity was not detected in any shellfish sample from Southern California sampling stations during September. However a sample of lobster viscera from Anacapa Island contained a low level of PSP toxins (Figure 3).

Domoic Acid

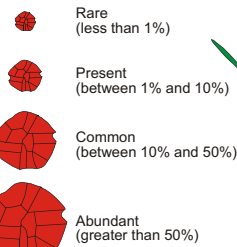
Pseudo-nitzschia was detected along much of the Southern California coast in September (Figure 1). There was a noticeable decrease in cell numbers along the San Luis Obispo coast. This diatom increased in abundance at several sites offshore of Santa Barbara and Los Angeles counties. The highest relative abundances of *Pseudo-nitzschia* were observed at the Cal Poly Pier in Avila (San Luis Obispo County) on September 5, declining dramatically through the remainder of the month.

Domoic acid was not detected in any shellfish samples collected in September. Two samples of lobster viscera, from Anacapa Island and just offshore of Ventura County, were found to contain low levels of domoic acid.

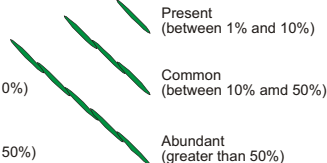
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Relative Abundance of Known Toxin Producers

Alexandrium Species



Pseudo-nitzschia Species



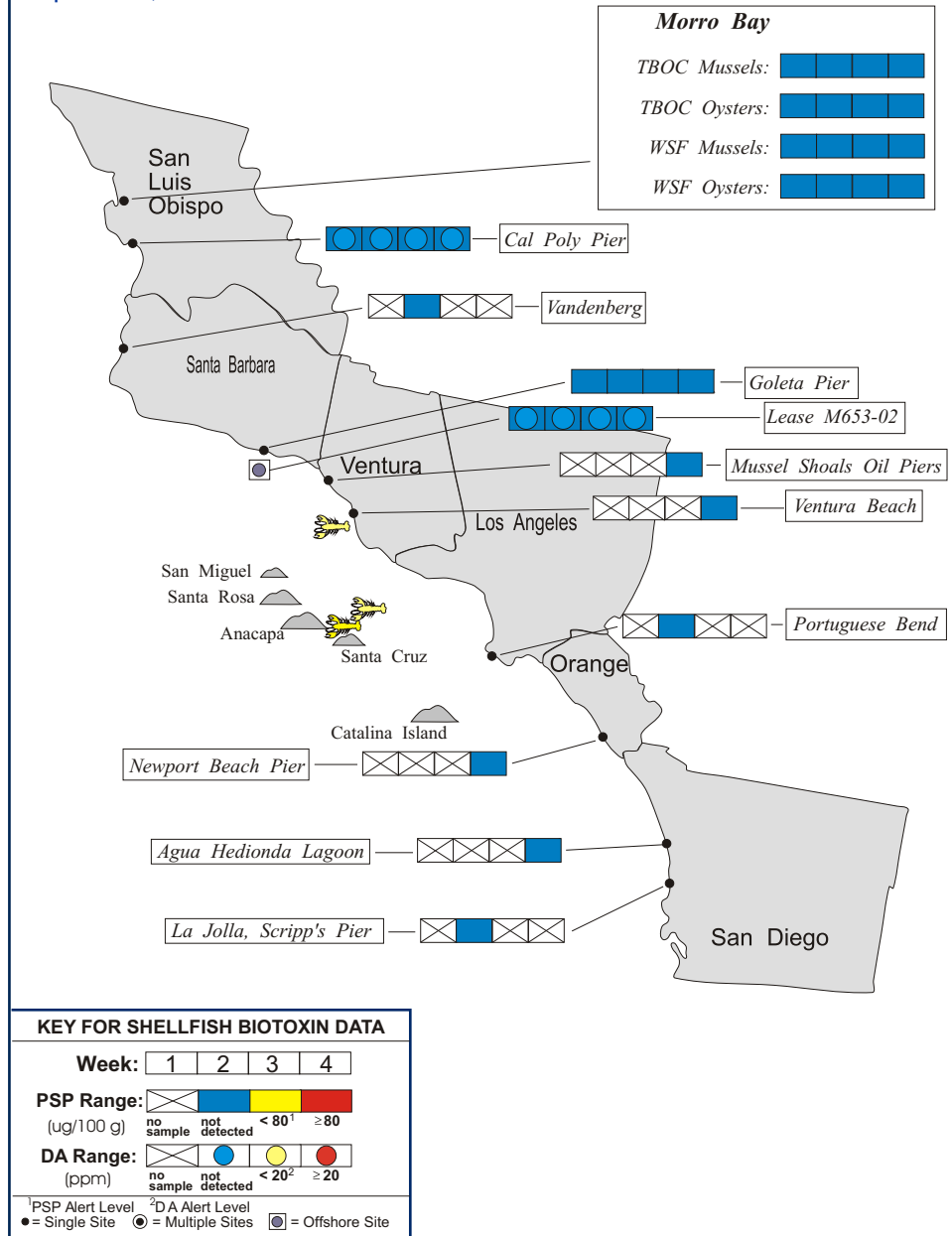
MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

For areas with multiple sampling stations, species abundance at each station is represented as follows:

(A,P) = Abundance for *Alexandrium* and *Pseudo-nitzschia*.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

Figure 3. Distribution of shellfish biotoxins in Southern California during September, 2007.



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Non-toxic Species

Diatoms remained dominant along the Southern California coast for most of the month. *Thalassionema* was common along the San Luis Obispo coast, while *Chaetoceros* was the most common diatom along the remainder of the coast. The dinoflagellate *Cochlodinium* was initially observed at Pismo Pier (common on September 12) and was abundant by the end of the month at this site (September 26). This dinoflagellate was common at Cayucos Pier (September 25) and abundant at the Cal Poly Pier and the Goleta Pier by September 26.

Northern California Summary:

Paralytic Shellfish Poisoning

Alexandrium was observed at several sites between Marin and Monterey counties in September (Figure 2). This distribution was reduced from observations in August and the relative abundance was dramatically lower than the previous month.

The elevated level of PSP toxins detected in sentinel mussels from Drakes Bay during the last week of August continued into the first week of September, reaching 155 ug/100g tissue (Figure 4). Low

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Public Health, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide effort designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553-4133

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concentrations of these toxins remained at this site throughout the month. The high concentrations of these toxins in Drakes Estero during August declined below the alert level by the first week of September and were not detectable by the latter half of the month. In a similar pattern, the low levels of PSP toxins detected in Humboldt Bay in August also persisted into the first week of September.

Domoic Acid

The distribution of *Pseudo-nitzschia* was similar to observations in August, although the relative abundance appeared to increase in Humboldt Bay, outer Tomales Bay, and at sites offshore of San Francisco and San Mateo counties (Figure 2). Domoic acid was not detected in any shellfish samples analyzed in September.

Non-toxic Species

Diatoms continued to dominate the phytoplankton assemblage along the Northern California coast. *Eucampia*, *Thalassionema*, *Rhizosolenia*, and *Chaetoceros* were the most common genera observed. Some dinoflagellates were also observed, including *Akashiwo* (Tomales Bay, Seacliff Pier), and *Cochlodinium* (Pacifica Pier).



QUARANTINES:

The annual mussel quarantine was initiated early, on April 20, due to the widespread increase in domoic acid levels along the coast. The annual quarantine, which normally goes into effect on May 1 of each year, applies specifically to sport-harvested mussels and is in effect for the entire California coastline, including all bays and estuaries. Routine phytoplankton and

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Figure 4. Distribution of shellfish biotoxins in Northern California during September, 2007.

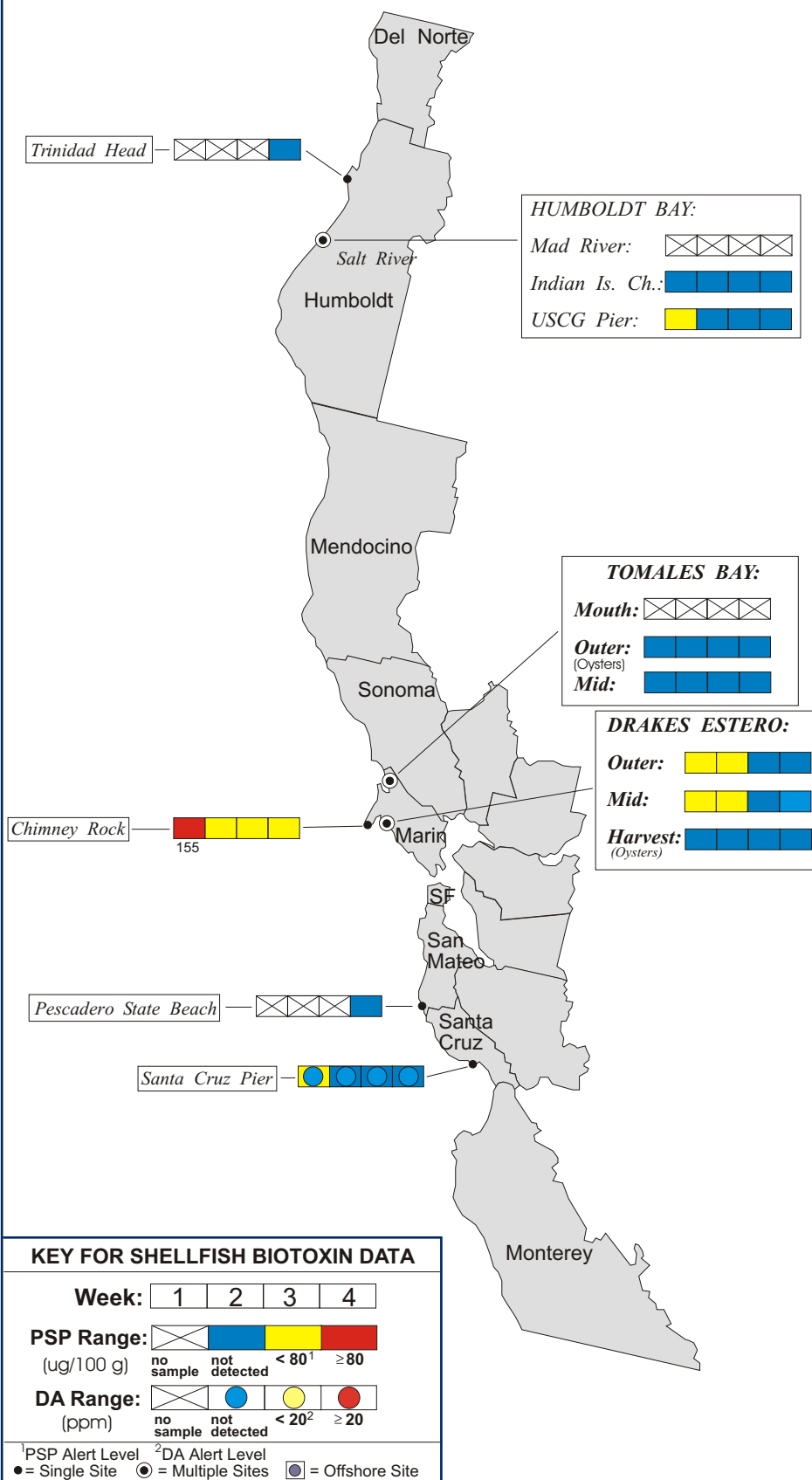


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during September, 2007.

COUNTY	AGENCY	# SAMPLES
Del Norte	None Submitted	
Humboldt	Coast Seafood Company	10
	Humboldt County Environmental Health Department	1
Mendocino	None Submitted	
Sonoma	None Submitted	
Marin	Cove Mussel Company	4
	Drakes Bay Oyster Company	32
	Hog Island Oyster Company	4
	CDPH Marine Biotoxin Monitoring Program	8
	Marin Oyster Company	1
San Francisco	None Submitted	
San Mateo	San Mateo County Environmental Health Department	1
Santa Cruz	U.C. Santa Cruz	4
Monterey	None Submitted	
San Luis Obispo	Cal Poly	4
	Tomales Bay Oyster Company	7
	Williams Shellfish Farms	8
Santa Barbara	Santa Barbara Mariculture Company	8
	U.C. Santa Barbara	4
	Vandenberg AFB	1
Ventura	Ventura County Environmental Health Department	2
	CDPH Volunteer (Bill Weinerth)	2
Los Angeles	Los Angeles County Health Department	1
Orange	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	1
	Scripps Institute of Oceanography	1

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biotoxin monitoring is maintained throughout the quarantine period. The annual quarantine does not affect the certified commercial shellfish growing areas in California. All certified shellfish growers are required to submit at least weekly samples of shellfish for toxin monitoring. Harvest restrictions or closures are implemented as needed to protect the public's health.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Washington clams can concentrate the PSP toxins in the viscera and in the dark parts of the siphon and can remain toxic for a long period of time. Persons taking scallops or clams, with the exception of razor clams, are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Razor clams are an exception to this general guidance due to their ability to concentrate and retain domoic acid in the edible white meat.

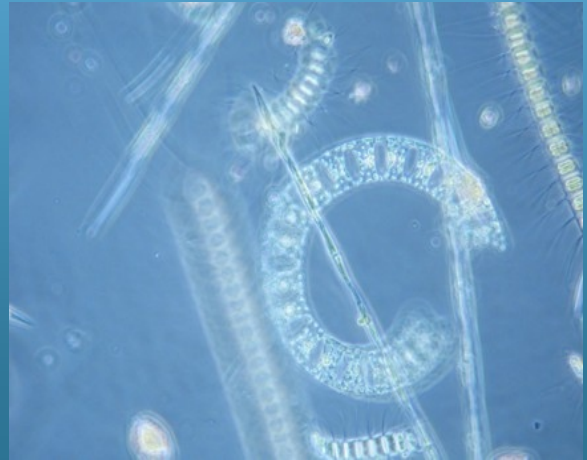
Consumers are also advised that cooking does not eliminate the toxins from the shellfish tissue. Sport harvesters are encouraged to contact the "Biotoxin Information Line" at 1-800-553-4133 for a current update on marine biotoxin activity prior to gathering and consuming shellfish.



Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during September, 2007.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	1
Humboldt	Coast Seafood Company	4
Mendocino	None Submitted	
Sonoma	Cordell Banks National Marine Sanctuary	1
Marin	CDPH Volunteers (<i>Brent Anderson, Cal Strobel, Marjorie Siegel, Mary Von Tolkdorf, Richard Plant</i>)	11
	Drakes Bay Oyster Company	17
Contra Costa	CDPH Marine Biotoxin Monitoring Program	4
	CDPH Marine Biotoxin Monitoring Program	1
San Francisco	CDPH Volunteer (<i>Eugenia McNaughton</i>)	5
	Gulf of the Farallones National Marine Sanctuary	2
San Mateo	San Mateo County Environmental Health Dept.	1
	Gulf of the Farallones National Marine Sanctuary	6
	The Marine Mammal Center (<i>Stan Jensen</i>)	4
	U.C. Santa Cruz	1
Santa Cruz	The Marine Mammal Center (<i>Nancy Scarborough</i>)	2
	U.C. Santa Cruz	4
Monterey	Marine Pollution Studies Laboratory	1
	Monterey Abalone Company	3
San Luis Obispo	CDPH Volunteer (<i>Renee and Auburn Atkins</i>)	3
	Cal Poly	14
	Monterey Bay National Marine Sanctuary	3
	Morro Bay National Estuary Program	3
	Tenera Environmental	3
	The Marine Mammal Center (<i>Tim Lytsell, P.J. Webb</i>)	9
	Tomales Bay Oyster Company	2
Santa Barbara	CDPH Volunteer (<i>Sylvia Short</i>)	4
	Channel Islands National Marine Sanctuary	2
	National Park Service	1
	Santa Barbara Channel Keeper	1
	Santa Barbara Mariculture Company	2
	U.C. Santa Barbara	4
Ventura	Channel Islands National Marine Sanctuary	1
	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Sanitation District	4
	Southern California Marine Institute	1
	Guided Discoveries, Tole Mour	10
Orange	Orange County Health Care Agency	1
	Ocean Institute	1
San Diego	Avian Research Associates	3
	CDPH Volunteer (<i>Paul Sims</i>)	2
	Scripps Institute of Oceanography	5

PHYTOPLANKTON GALLERY



The diatom *Eucampia* was common at several sites along the Northern California coast.



Pseudo-nitzschia remained common offshore of Southern California.



The dinoflagellate *Ceratium macroceros* is occasionally observed in offshore samples from Southern California.